BEFORE THE
Federal Communications Commission
WASHINGTON, D.C.

In the Matter of	)	
	)	
Revision of the Commission's	)	CC Docket No. 94-102
Rules to Ensure Compatibility	)	
With Enhanced 911 Emergency	)	
Calling Systems	)	

COMMENTS OF THE
CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION

The Cellular Telecommunications Industry Association ("CTIA")[1] respectfully submits these comments in the above mentioned proceeding.[2] Almost exactly one year after the release of its *Report and Order* establishing CMRS carriers' 911 and enhanced 911 obligations, the Commission continues to deepen the hole it dug for itself in adopting rules that require wireless carriers to process calls for non-subscribed to mobile units. Over one year ago, the wireless industry and the public safety community formulated a

[1] CTIA is the international organization of the wireless communications industry for both wireless carriers and manufacturers. Membership in the association covers all Commercial Mobile Radio Service ("CMRS") providers, and includes forty-eight of the fifty largest cellular and broadband PCS providers. CTIA represents more broadband PCS carriers and more cellular carriers than any other trade association.

[2] *See* Public Notice, "Commission Seeks Additional Comment in Wireless Enhanced 911 Rulemaking Proceeding Regarding Ex Parte Presentations on Certain Technical Issues," CC Docket No. 94-102, DA 97-1502 (released July 16, 1997).

wireless solution to 911 call processing. After an exhaustive review of the technical and policy issues surrounding implementation of wireless 911, the parties reached a Consensus Agreement that encompassed most, although admittedly not all, of what was required to deliver E911 service to wireless users. It was this agreement upon which the Commission's subsequent *Report and Order* was largely based. As the Petitions for Reconsideration and the current round of *ex parte* submissions make clear, the Commission should have refrained from tampering with the delicate balance between the needs of the public safety community and the capabilities of the wireless industry to provide E911 service. The Commission's decision in the *Report and Order* to extend the benefits of E911 to non-subscribers demonstrates once again how perfect is the enemy of the good.[3]

In its Public Notice, the Commission seeks comment on a number of technical issues, all of which revolve around the information passed from the wireless handset, to the cell site, switch, and, ultimately, the public safety answering point ("PSAP"). Although the details surrounding this highly technical process is generally relevant to how a 911 call is processed and delivered, the advent of local number portability ("LNP") makes such details irrelevant to the

[3] The concept of the perfect as the enemy of the good is drawn from Voltaire's comment about dramatic art in his Philosophical Dictionary of 1764. *See William Safire on Language*, The New York Times, March 3, 1996, Section 6 at 34.

bigger question of what the wireless industry will be capable of in the future. The Commission will cause more confusion than clarity if it bases its policy decisions on a snapshot view of the wireless world as it exists today, rather than on a broader view of how it will look in the near future.

Currently, whether the Mobile Identification Number ("MIN") is transmitted from the handset to the various points of call completion is relevant because the MIN is also the Mobile Directory Number ("MDN"), or telephone number, of the subscriber. Hence, transmission of the MIN/MDN allows call back capabilities. As of December 31, 1998 -- just eight months after the deadline for implementation of Phase I of 911 obligations -- however, the first phase of wireless LNP is currently scheduled to be implemented. Implementation of wireless LNP will require that the MIN be a separate and distinct number from the MDN. Thus, instead of a single MIN/MDN, every handset will have two sets of numbers: a Mobile Station Identifier ("MSID") and the MDN. The MDN will be a dialable directory number and will be the portable number. The MSID will not be portable.[4] GSM technology, which is based on ISDN architecture, already separates these numbers, and thus

[4] See Attachment A, *CTIA Report on Wireless Number Portability*, at Section 2.3 (released April 11, 1997).

cannot provide call back capability to unsubscribed to mobile units.[5]

Because any number, either wireless or wireline, must be treated as "portable" once LNP is implemented, extensive processing must be done by the carrier's switch ("MSC") to determine the dialable number for call back. As such, the call back capability will be dependent on the existence of a valid MSID that can be correlated to the MDN. Today's answers to the Commission's questions about which "codes uniquely identify the handset and subscriber," then, change once LNP is implemented.[6]

Moreover, with the implementation of number portability the inability of wireless networks to recognize geopolitical boundaries becomes even more significant.[7] In a wireless network, a single switch may cover areas served by hundreds of PSAPs. A single switch which serves many PSAPs may not be able to conduct the number translation process required in a number portability environment on a PSAP-selective basis.

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[5] *See* PCIA *ex parte* at 6.

[6] As CTIA and others previously have commented, for this reason the Commission's definition of "code identified" must be changed.

[7] As the Commission knows, neither CMRS license areas nor radiofrequency ("RF") propagation respects geopolitical boundaries. Although not addressed in this round of comments, the resources required to map cell site coverage areas and arrange for default routing to multiple PSAPs by multiple CMRS carriers that constantly are building out their networks will greatly burden carriers and PSAPs alike, adding cost and complexity to wireless E911 service.

In a number portability environment, the separation of the MIN and MDN, as described above, is mandatory. The industry is currently considering the use of a temporary local directory number ("TLDN") to support 911 calls in this environment. If this costly and complex solution was adopted, the switch would be required to translate the unique MSID into a TLDN for call back purposes. This matching process requires validation to occur at the switch level. Therefore, if, say, one PSAP out of the 20 PSAPs served by a single wireless switch requests receipt of both initialized and non-initialized calls, the switch will have to "turn off" the translation process which supports call back for validated subscribers. In a number portability environment, it will require huge amounts of processing time and resources to selectively "turn off" the number portability query function in order to deliver a non-initialized call to selective PSAPs and yet maintain the call back and other enhanced functions for the other PSAPs.[8] As a result, all of the PSAPs served by that switch may/will lose the call back capability (depending on the switch type) so that the single PSAP may receive non-initialized calls. This will not affect, however, carriers' ability to provide basic, *i.e.*, "Phase 0," 911 service.

[8] It also should be noted that the costs and time required to modify switching software and other related modifications is a burden on all participants -- not just wireless carriers. Both LECs and public safety agencies will be required to make major technical upgrades to accommodate such capabilities.

Even under today's regime, 911 calls can and are passed regardless of whether the handset has been initialized. As the Commission has recognized, however, when non-initialized calls are transmitted to a PSAP, the PSAP should not receive Automatic Numbering Information ("ANI") allowing call back.[9] The Commission got this right the first time, despite the inaccurate characterization of "temporary call back numbers" by the Ad Hoc Alliance for Public Access to 911.[10] The Alliance states that

> "the software necessary to assign a temporary call back telephone number (pseudo MIN) to any handset is already resident in the cell switches. The cellular industry has used pseudo MINs for call backs to roaming handsets for many years. Passing this temporary local call back number to PSAPs for all 911 callers is a trivial exercise."[11]

Temporary MDNs [sic] are used solely in a roaming environment. In that instance, however, the temporary number is only valid for 20 seconds for call delivery. Even then, the temporary number must be translated to a unique subscriber code (or MSID) in order to support call back. In the case of a non-initialized subscriber, the temporary directory number would be mapped to the default number programmed into the handset by the manufacturer or previous

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[9] Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Report and Order*, at ¶ 38 (released July 26, 1996). CTIA refers to the delivery of 911 calls without ALI or ANI as "Phase 0" service.

[10] *See* Comments of Ad Hoc Alliance at 2.

[11] Comments of Ad Hoc Alliance at 2.

valid subscriber (*e.g.*, 001110011 or NPA-NXX-XXXX). There may be countless individuals with non-initialized phones having the same default number programmed in the handset. Because wireless networks are designed to work with unique numbers, it is problematic and unpredictable when the PSAP attempts to call back the 911 caller using a temporary directory number that maps to multiple users. One of the other users may receive the call back, or the system may simply shut down all of the numbers, disabling any call back capability. For these reasons, the comments of the Ad Hoc Alliance should be disregarded.

CTIA has reviewed the *ex parte* comments submitted by PCIA and GTE and agrees with their findings. As they, along with CTIA's own *ex parte* comments, made abundantly clear, to the extent uniformity is important to both users and PSAPs, wireless carriers will only be able to provide Phase 0 service (*i.e.*, no call back information) if the Commission requires wireless carriers to process calls from non-subscribed to mobile units. This will deny the benefits of Phase I and Phase II ANI to all wireless callers and undercut the rationale for funding and deployment of wireless E911 services.

Moreover, question 14 on the Commission's list fails to recognize the complex and dynamic structure of the wireless industry. Whether it is technically feasible or not to require all PSAPs served by a single switch to elect whether or not to receive calls from non-subscribed to phones, every

geographic location will be within the license area of two cellular carriers (often with different "clusters" of coverage), PCS licensees covering MTAs and BTAs with one or more switches, and covered enhanced specialized mobile radio service providers. Thus, it will not be possible to use the simplified "default" rule propounded in question 14.

CONCLUSION

For the reasons stated above, the Commission should consider in its policy decisions the implications that other regulatory requirements such as number portability will have on the implementation of wireless 911. The Commission also should ensure that, in its efforts to establish effective and efficient 911 obligations, it does not undermine the established policy objectives already set forth in its *Report and Order*.

Respectfully submitted,

Wendy C. Chow
Staff Counsel

Michael Altschul
Vice President and
General Counsel

Randall S. Coleman
Vice President,
Regulatory Policy & Law

CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION
1250 Connecticut Ave., N.W.
Washington, D.C. 20036

July 28, 1997

Attachment A

CTIA-Building the Wireless Future

CTIA
Report on
Wireless Number Portability

Created by the Number Portability Sub-task Group

on behalf of the

Cellular Telecommunications Industry Association

Number Advisory Group

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REVISION HISTORY

Version	*Date*	*Remarks*
1.0	April 14, 1997	Initial Publication

1. INTRODUCTION

1.1 Purpose and Scope

The purpose of this document is to characterize the network architecture and operational procedures necessary for the support of Number Portability (NP) in the wireless industry per Federal Communications Commission (FCC) order *Number Portability Report and Order, CC Docket 95-116*. This document represents consensus agreements among members of the Cellular Telecommunications Industry Association (CTIA). This document is applicable to analog Advanced Mobile Phone System (AMPS), Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), and Global System for Mobile Communications (GSM) providers (including digital Specialized Mobile Radio (SMR) providers), alike. Differences among Wireless Service Providers (WSP) technologies and implementation strategies are noted where appropriate. Proprietary implementations are outside the scope of this document.

This document focuses only on Wireless Number Portability (WNP), mainly on the case of a subscriber porting to a WSP. WSPs have some fundamental differences with regard to service and network operations as compared to wireline service providers; therefore, certain aspects of NP concepts and definitions have different relevance to WSPs. This document will explain how the wireless solution will account for such differences.

The primary audience for this document is WSPs and wireless equipment and service vendors who assist in the definition, development and deployment of WNP. This document may also benefit other groups such as the wireline industry. It assumes the reader is familiar with the wireless telecommunications technologies.

The remaining sections of the introduction present necessary background information to establish a foundation for the WNP architecture, including the following:

- WNP goals,
- NP history,
- NP definitions and interpretations for WNP, and
- WNP assumptions as applicable to this document.

1.2 Solution Goals

The WNP solution as documented here has been developed in accordance with the following significant goals in order to uphold wireless call processing and mobility management:

- Minimize impact on existing networks.

- Continue to allow for roaming and roaming agreements with more than one service provider in any serving area per negotiated business arrangements.
- Do not inhibit the future growth of wireless technology.
- Support the long-term efficient use of numbering resources.
- Support wireless existing and changing service areas without inhibiting competition.

1.3 Definitions

Readers should use the following definitions when reading this document:

- *Service Provider Portability* is defined by the FCC as "the ability of end users to retain the same telephone numbers as they change from one service provider to another." [1]
- *Location Portability* is defined by the FCC as "the ability of users of telecommunications services to retain existing telecommunications numbers without impairment of quality, reliability, or convenience when moving from one physical location to another." [2]

  Location portability should be distinguished from the inherent mobility of wireless communication. Location portability in a wireless environment refers to a subscriber's ability to retain his/her directory number when moving from the serving area of one home system to another or changing the wireline rate center associated with the mobile directory number. (Refer to Section 1.6 for more details.)
- *Service Portability* is defined by the FCC as "the ability of users of telecommunications services to retain existing telecommunications numbers without impairment of quality, reliability, or convenience when switching from one telecommunications service to another service provided by the same telecommunications service provider." [3]
- *Home Serving Area* - the geographic area of coverage provided by a WSP where subscribers may originate and terminate calls without incurring roaming charges.
- *Mobility* - the ability of a mobile station (and thus subscriber)
  - to move temporarily from one location to another and still obtain telecommunication services (i.e., roaming); and
  - to be in motion while continually accessing telecommunication services (i.e., hand-off).

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[1] FCC *Number Portability Report and Order*, CC Docket 95-116, July 2, 1996 paragraph 172.

[2] ibid., paragraph 174.

[3] ibid., paragraph 172.

- *Number Portability Administration Center Service Management System (NPAC-SMS)* - a Service Management System (SMS) responsible for storing and broadcasting to service providers NP data updates within a region for ported DNs. The NPAC-SMS(s) is owned and maintained by a neutral, third-party.
- *Local Service Management System (LSMS)* - an SMS responsible for distributing the NP data updates from the NPAC-SMS to the service provider's NP-SCP, typically is owned and maintained by the service provider.
- *Mobile Station (MS)* "is the interface equipment used to terminate the radio path at the user side. It provides the capabilities to access network services by the user." [4]
- *Mobile Directory Number (MDN)* - a 10-digit North American Numbering Plan (NANP) directory number assigned to address a wireless service subscriber.
- *Directory Number (DN)* - any E.164 10-digit dialable number assigned to address a wireline or a wireless subscriber. DNs are inclusive of MDNs.
- *Mobile Station Identifier (MSID)* - either a 15-digit E.212 formatted International Mobile Station Identification (IMSI) or 10-digit Mobile Identification Number (MIN).
  - *International Mobile Station Identifier (IMSI)* - a 15-digit non-dialable number associated with a specific service provider and unique to each mobile station. It is programmed into the mobile station and used to identify the mobile, its home network, and its country. [5]
  - *Mobile Identification Number (MIN)* - a 10-digit non-dialable number associated with a specific service provider and unique to each mobile station (as an MSID). It is programmed into the mobile station and is designed to contain a NANP-formatted number (e.g., NPA-NXX-XXXX). This number, as an MSID, may be equivalent to the value of a dialable MDN. MIN is the prevalent identifier in AMPS networks.
- *Donor Network* - the network from which a subscriber ports. If the subscriber has ported more than once, the first network to release the subscriber is referred to as the original donor network. The original donor network is also the original owner of the number.
- *Recipient Network* - the network to which a subscriber ports.

[4] IS-41.1 Rev C

[5] *International Mobile Station Identity (IMSI) Assignment Guidelines and Procedures*, Prepared by a Wireless Industry Forum, Sponsored by CTIA and PCIA, Version 1, February 12, 1996.

1.4 Background

1.4.1 The FCC Order

The FCC *Number Portability Report and Order, CC Docket 95-116,* dated July 2, 1996, mandates that all Commercial Mobile Radio Service (CMRS) providers provide the capability to deliver calls from their network to ported numbers anywhere in the United States by December 31, 1998. Furthermore, the order mandates that these providers offer service provider portability, including support for roaming, by June 30, 1999.[6]

The following are some key excerpts from the original FCC report and order:

- "We require all cellular, broadband PCS, and covered SMR carriers to have the capability of querying appropriate number portability database systems in order to deliver calls from their networks to ported numbers anywhere in the country by December 31, 1998."[7]
- "We require all cellular, broadband PCS, and covered SMR carriers to offer service provider portability through out their networks, including the ability to support roaming, by June 30, 1999. ... We believe a nationwide implementation date for number portability for cellular, broadband PCS, and covered SMR providers is necessary to ensure that validation necessary for roaming can be maintained."[8]
- Interim number portability measures are not required for WSPs.[9]
- Service and Location portability are not required at this time.[10] In addition, changes between wireline service providers and broadband CMRS providers or among broadband CMRS providers are considered changing service providers and not service. Thus, service provider portability includes wireless to wireless, wireline to wireless as well as wireless to wireline.[11] As mentioned in the introduction, this document focuses on those scenarios in which a subscriber ports to a wireless provider.
- Customers may need to purchase new equipment (e.g. mobile station) when switching among CMRS providers.[12]
- The issue of regional number portability databases and their content and administration is assigned to the North American Numbering Council (NANC).[13]

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6 FCC *Number Portability Report and Order,* CC Docket 95-116, July 2, 1996, paragraph 172.

7 ibid., paragraph 165.

8 ibid., paragraph 166.

9 ibid., paragraph 169.

10 ibid., paragraph 181.

11 ibid., paragraph 172.

12 ibid., paragraph 157.

The FCC did not mandate a specific method for number portability but has recognized that the Location Routing Number (LRN) method is currently preferred by much of the industry, although not tested.[14] A field test of LRN as it applies to the wireline industry is scheduled for execution in Chicago through the summer of 1997.[15] [16] The intent of the test is to prepare for the wireline implementation and currently does not include the wireless solution. Refer to Section 1.7 regarding trial report availability.

The FCC, in its original order, established a list of nine performance criteria which must be met by any number portability method:

(1) "support existing network services, features, and capabilities;

(2) efficiently use numbering resources;

(3) not require end users to change their telecommunications numbers;

(4) not require telecommunications carriers to rely on databases, other network facilities, or services provided by other telecommunications carriers in order to route calls to the proper termination point;

(5) not result in unreasonable degradation in service quality or network reliability when implemented;

(6) not result in any degradation of service quality or network reliability when customers switch carriers;

(7) not result in a carrier having a proprietary interest;

(8) be able to accommodate location and service portability in the future; and

(9) have no significant adverse impact outside the areas when number portability is deployed." [17]

On March 6, 1997, the FCC issued its *First Memorandum Opinion and Order on Reconsideration*, CC Docket No. 95-116 to further clarify and rule on several outstanding inquiries regarding NP. The following points are notable:

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[13] ibid., paragraphs 91-102.

[14] ibid., paragraph 46.

[15] ibid., paragraph 79.

[16] FCC *First Memorandum Opinion and Order on Reconsideration*, CC Docket 95-116, March 6, 1997, paragraph 79.

[17] FCC *Number Portability Report and Order*, CC Docket 95-116, July 2, 1996, paragraphs 48-59.

(a) "...we find criterion four... is, from a practical perspective, unworkable. ... Thus, criterion four does not appear to be necessary in order to implement the statutory definition of number portability." [18]

(b) "We clarify that by June 30, 1999, CMRS providers must (1) offer service provider portability in the 100 largest MSAs, and (2) be able to support nationwide roaming. Although we have not provided a specific phased development schedule for CMRS providers as we have for wireline carriers, we expect that CMRS providers will phase in implementation in selected switches over a number of months prior to the June 30, 1999, deadline for deployment." [19]

(c) "...CMRS carriers need only deploy local number portability by this deadline in the 100 largest MSAs in which they have received a specific request at least nine months before the deadline (i.e., a request has been received by September 30, 1998)." [20]

1.4.2 Wireless Industry Studies

During August, 1996, CTIA released a Notice of Request for Information (RFI) to the telecommunications industry. The goal of the RFI was to solicit potential methods available to the wireless industry for number portability implementation. CTIA received more than one hundred inquiries leading to several substantive responses.[21] A Number Portability Forum was held October 9-11 in Las Vegas to review the presentations of the responses and find consensus on an approach to NP in the wireless industry.

On January 22, 1997, CTIA released to both TIA and Committee T1 standards committees a Standards Requirements Document (SRD) entitled *Wireless Number Portability CTIA Standards Requirement Document*. It provided the appropriate committees with an initial look into the requirements of WNP on current and future standards.

The FCC has sponsored a forum for agreeing to NP concepts via a Working Group under the North American Numbering Council (NANC). Since CMRS providers are regulated at the federal level (as opposed to the state level) and their participation in number portability is mandated, the involvement of WSPs and consideration of related wireless specific issues has become more crucial. This document is not intended to supersede any decisions made by these committees but is intended to capture portability as it involves WSPs.

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[18] FCC *First Memorandum Opinion and Order on Reconsideration*, CC Docket 95-116, March 6, 1997, paragraph 19.

[19] ibid., paragraph 136.

[20] ibid., paragraph 137.

[21] Contact CTIA for more information.

1.5 Assumptions

The following assumptions are made throughout the WNP architecture:

- When a subscriber ports, the subscriber's current terminal equipment may or may not be compatible with the new SP's technology. A subscriber may need to purchase a new mobile station in order to obtain the services from a new WSP. Therefore, a subscriber may or may not port his or her mobile station.
- The NPAC-SMS will contain a record for each ported wireline DN and each ported MDN (within the area that it serves).
- Service providers are responsible for maintaining the integrity of their copy of the NPAC-SMS data.
- Each subscriber is identified by at least one unique NANP directory number that will port with the subscriber from one service provider to another.
- This document makes no assumptions regarding the number nor distribution of NPAC-SMSs, except that more than one will most likely be established and will be in place in time for WNP.
- Although this document most often refers to the number portability query database as residing on an NP-SCP, the WNP Solution does not preclude a WSP from locating the number portability query database on another platform such as an STP.
- This document details service provider portability for facility-based WSPs. It does not consider the complications of a re-seller environment in its discussions. (A facility-based WSP is one that operates at least one MSC.)

1.6 Aspects of Wireless Number Portability

Because wireless service providers have some fundamental differences in their network operation and services as compared to wireline, differences arise in the design and implementation of wireless number portability. These differences impact how and when subscribers can port to a wireless service provider. To appreciate these aspects, this section presents an overview of these differences, a logical discussion toward explaining wireless portability boundaries, as well as the definition of those boundaries.

1.6.1 Differences between Wireless and Wireline

The differences between wireline LECs and WSPs that impact the definition of portability are summarized in Table 1-1.

Table 1-1 Wireline versus Wireless Calling Aspects

Wireline	*Wireless*
A directory number is associated with a stationary physical facility (e.g. local loop).	A mobile directory number is not associated with any fixed physical loop.
The customer can only be served in a single static location with the same terminal.	The customer can be served over a wide geographic area with a single terminal. Mobility is inherent.
Aspects of local calling (including rating) are regulated by the states.	Aspects of local calling are not regulated by the states. Areas of local calling do not match those defined by wireline providers. Areas of local calling do not match from one WSP to another.
Incumbent LEC are bound by inter-LATA restrictions.	WSPs do not recognize the concept of LATAs.
Service Provider Portability is geographically bounded by rate centers.	Mobile-to-mobile and mobile outbound calls are not bounded by rate centers. Furthermore, wireline rate centers and similar wireless boundaries do not overlay one another.

The FCC definition of service provider portability does not distinguish between wireless or wireline service providers. However, since service provider portability should not disrupt current call rating, the inclusion of a WSP and the added complexities of the above differences must be carefully evaluated.

The definition of location portability infers that the number is associated with a physical, fixed facility. It involves changing rate centers associated with a number which presents significant impacts in rating the call of the originating party when the called party has moved their number to another rate center. However, the landline rate center definitions are not required to rate calls originated by wireless subscribers.

In light of these differences and in order to preserve the integrity of routing and rating of calls to wireless subscribers, whether ported or not, adjustments in interconnection and business agreements (e.g., Points of Interconnection (POI)) may be required.

1.6.2 Geographic Boundaries

1.6.2.1 Wireline Boundaries

In order to understand how wireless can participate in the FCC order without changing the wireline call rating, understanding call rating is fundamental. The concept of "rating" was created by wireline carriers as a method to capture distance related costs in billing. This concept

has been adopted by LECs for local calls as well as by IXCs for toll calls. Local carriers accomplished distance rating by defining a *rate center* as a geographic area associated with a single V(ertical) and H(orizontal) coordinate. Each telephone number by its NPA-NXX to an associated with a single rate center, often defined as the area served by a single switch (or a combination thereof). The distance related component of rating a call between two telephone numbers is, in essence, based on the difference of the two coordinates of their associated rate centers. Toll and long distance carriers adopted the same concept except that several rate centers may be aggregated to form a *rate district*. The rate district concept was then used to rate calls terminating outside of the local calling area (i.e., inter-city calls).

Today, wireline carriers associates wireless numbers (as defined by NPA-NXX) with a specific wireline rate center for mobile terminated calls. A wireline carrier can rate a wireline-to-wireless call based on the rate center V&H coordinates associated with calling and called party numbers.

A common assumption for service provider portability is that a subscriber originating a call should not be rated differently because of the called party's service provider or porting status. If a wireline subscriber originates a call, the rating should be the same regardless if the called party has ported to a WSP or where the serving MSC is located. Preserving the rating can be accomplished by WSPs having an interconnection agreements with the wireline SPs. Uniform treatment by wireline providers of calls to wireless subscribers continues to be an issue. Will the rating be based on the original wireline rate center or the fact that the subscriber is being served by a WSP? This issue remains for further study.

Rating calls to a portable wireless number is calculated using the rate center associated with the called party number (not the LRN). WNP does not define any requirement that a WSP obtain an LRN for every rate center associated with their serving area in order to accept a wireline subscriber desiring to port.

1.6.2.2 Wireless Boundaries

WSPs may rate calls originated by mobile subscribers; however, WSPs are not obligated to use the same physical boundaries of wireline rate centers or rate districts. Instead, WSPs utilize the concept of a geographical area referred to as a *Home Serving Area* (HSA). HSAs are typically much larger than the geography defined by a wireline rate center; for example:

- Basic Trading Area
- Metropolitan Service Area
- Major Trading Area

A WSP may define a portion of the above as a HSA or combine several of the above into a larger area. Unlike wireline rate centers which are regulated by the state utility commissions, HSAs are not subject to state jurisdiction (or any jurisdiction for that matter). Thus, the size of the HSA is a business decision of the WSP and frequently differs from one WSP to another.

Subscribers that originate calls within their HSA do not incur roaming charges. A WSP may define different "bands" or calling scopes within or across multiple HSAs which indicate that all mobile originated calls that terminate within the same "band" are rated the same.

1.6.2.3 Mobility versus Location Portability

Wireless users have the inherent ability to move while using their service; it is important to view this as *mobility*, not location portability. Being mobile does not impact the billing or rating for a wireline originated call. Mobility may impact the wireless subscriber through call forwarding charges and/or roaming fees.

Location Portability with respect to wireless is the ability to change Home Serving Areas or change the wireline rate center associated with the MDN. In this case, the wireline billing paradigm is impacted in the same way as with wireline location portability. For the wireless subscriber, this allows them to use their mobile set in a different area without incurring the roaming fees previously encountered .

1.6.3 Porting To and From

With wireline portability, any movement (i.e., relocation of the physical point of service) is technically considered location portability. However, it is recognized that the wireline implementation of service provider portability can "accommodate" a limited amount of location portability. That is, as long as the serving location is within the same rate center, the NP implementation does not impact billing or rating. Relocating outside the present rate center introduces significant billing and rating implications.

However, once a subscriber ports to a WSP, mobility is inherent. A subscriber can utilize the mobile station independent of any wireline rate center boundary. Furthermore, the subscriber can use the mobile station outside any HSA (subject to roaming agreements and charges). This mobility is transparent whether the subscriber chooses to actually relocate their residence or not.

1.6.3.1 Porting to a Wireless Service Provider

It is assumed that in order to be a recipient network, the WSP must have an FCC license to serve the location of the subscriber. The WSP is also assumed to provide radio coverage over the physical location where service was previously obtained by the ported subscriber. Serving the subscriber via a roaming agreement with another WSP does not constitute eligibility. Finally, WSPs are not required to have switching facilities within the same rate center area as the ported subscriber's DN NPA-NXX.

Given a WSP is eligible to receive a ported subscriber as defined in the above paragraph, the following criteria must be met to preserve the billing paradigm:

- A wireless subscriber can port the MDN to another WSP as long as the wireline rate center associated with the MDN is geographically located within the HSA of the involved WSPs.
- A wireless subscriber can port the MDN to a wireline SP as long as the resulting wireline SP is geographically located within the wireline rate center associated with the MDN's NPA-NXX.
- A wireline subscriber can port the DN to a WSP as long as the rate center associated with the wireline number is geographically located within the HSA of the involved WSP.

1.6.3.2 Porting to Wireline Service Provider

A subscriber that ports to a wireline carrier may have originally had their number assigned by a WSP. In this case, calls from other wireline subscribers should still be rated the same as before.

Each wireless number is associated with a rate center from a wireline perspective. The rate center may or may not be the same rate center where the wireless switch is located. Furthermore, the wireless subscriber may or may not reside in the rate center associated with their MDN. Consequently, to maintain consistent rating from the calling party's perspective, porting from a WSP to a wireline service provider can only occur when the resulting wireline service is geographically located within the wireline rate center associated with the ported MDN.

Abiding by such constraints does not impact wireline rating. Wireline calls rated on the called party number would continue to be rated the same. Assuming the subscriber has not moved, then from a rating perspective, the situation analogous to a subscriber using the mobile station at the subscriber's residence. Once the subscriber has ported to a wireline provider, that subscriber is constrained to using the telephone number only at a fixed location.

1.7 Critical Dates

1.7.1 Regulatory Mandates

Several dates are included in the FCC order concerning portability implementation. The earliest implementation of wireline service provider portability by the incumbent LECs in the top 100 Metropolitan Statistical Areas (MSAs) is 4Q97.

CMRS providers are not required to implement any technology to support wireline service provider portability by this date and thus, can continue to route calls to the donor LEC as normal. However, CMRS providers must make arrangements to complete calls to portable subscribers by December 31, 1998. Since calls made prior to this date will connect successfully nonetheless, this date is interpreted as requiring the WSP to either

- directly query a database and route the call to the proper network, or

- make business arrangements for another provider to query and properly route the call to the proper network.

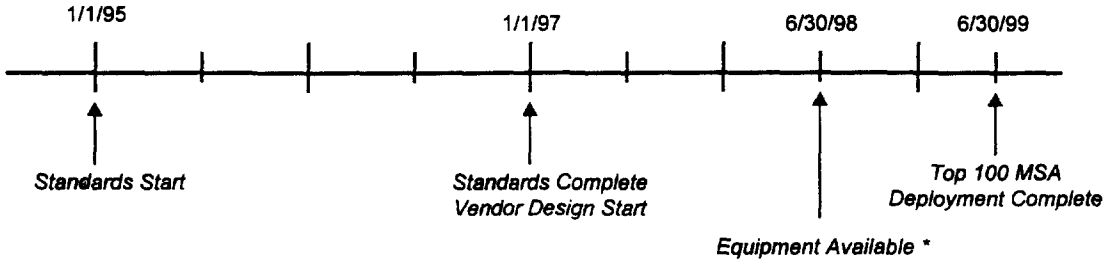
The WSP need not own nor operate the database; the WSP may have a business relationship with another entity regarding access to that entity's database.

The second critical date involving CMRS providers is June 30, 1999. By this date, WSPs must be capable of receiving and releasing wireless ported subscribers and must have all the capabilities required for service provider portability.

1.7.2 Implementation

In order to consider the ability to comply with the FCC mandated dates, the aspect of standards and equipment availability must be considered. If one considers the normal development time of 2 years for standards, 18 months for equipment development beyond standards and 12 months for equipment deployment, the time line on the following page would apply.

Figure 1-1 Theoretical Timeline



** Assumes typical vendor development cycle of 18 months*

In order to meet the end date, the intervals must shortened or overlapped. The following compressed timeline in Figure 1-2 is offered for consideration in planning for WNP.